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ABSTRACT

To determine a cost effectiveness relationship between instructional costs and student achievement gains in reading, six programs in the Grand Rapids, Michigan, Public Schools were studied. Subjects were engaged in three performance contracting programs --Alpha II, Westinghouse Learning Corporation (WLC), and Combined Motivation and Educational Systems (CMES); Project Read; a traditional remedial (TRR) program; and the regular (control) program. Among the study's major conclusions are: (a) in grades 2 and 3 (all programs but CMES were in operation) WLC was least expensive per one-tenth grade gain, and TRR produced the highest overall mean gain at a considerably higher cost; (b) in grade 7 (all but WLC and Project Read were used) CMES and Alpha II were the most cost effective, and TRR was the most expensive per one-tenth achievement gain; (c) in grades 8 and 9 (only Alpha II, CMES, and the control operated) the control was most expensive per one-tenth grade gain; gains for Alpha II and CMES were slightly above one grade level, whereas the control produced about one-third that gain. (RD)

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ABSTRACT

A COST-EFFECTIVE ANALYSIS OF SELECTED READING PROGRAMS IN THE GRAND RAPIDS PUBLIC SCHOOLS

By

Joan Marie Webster

The Problem

The current challenge of accountability from the taxpaying public requires proof of results. The results might best be based upon a per-pupil cost of a learning unit or grade gain skills acquired rather than solely on the cost of maintaining children in school.

Purpose of the Study

The major purpose of the study was to determine a cost-effectiveness relationship between inputs (instructional costs) and outputs (student achievement gains) in six reading programs in the Grand Rapids Public Schools. Subsequently, the design shown could establish a model upon which school officials can make future decisions regarding the use of resources available.

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Student Population Sample

The studied programs operate within the Title I area (inner city) identified as being eligible for compensatory funds. A population sample was drawn from each of the programs. The students have been identified as the lowest performing students in reading in that grade level in selected schools as verified by the school system's previous spring testing scores. All students in the sample are enrolled in grade levels 2, 3, 7, 8, and 9.

Procedure and Design

Due to the variety of programs, the different time allotments for the reading activities and unequal class sizes; the inputs (instructional costs) were reduced to a common denominator of student minutes of exposure (SME) in six cost categories that were defined as the most appropriate definable variables that constitute the differences in the programs studied. The six cost categories were identified as staff salaries, both professional and paraprofessional; start-up costs; added facility costs; staff training costs; student and teacher incentive costs; and costs for materials and supplies. A per-student annual cost for the programs studied included three performance contracting programs: Alpha II, Westinghouse Learning Corporation (WLC),* Combined Motivation and Educational

*Now called Learning Unlimited.

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Systems (CMES); Project Read--a publishing company's "canned" program; Traditional Remedial Reading (TRR) and a regular (control) school program. All other costs were considered to be prorated equally across all programs.

A pre/post testing program using the Metropolitan 70's standardized achievement test measured the student gains in the reading programs studied.

The statistical design deemed most appropriate for examining the reading achievement gains was the analysis of variance. Because of the unequal cell size, the Scheffé post hoc procedure was applied.

To compute the cost of one-tenth (.1) student achievement gain in reading and thereby establishing a relationship between costs and gains (inputs to outputs), the annual cost for reading was divided by the average one-tenth grade gain.

Achievement Gains and Cost- Effectiveness Results

The unequal assignment of program treatments prohibited any over-all analysis covering all of the data at one time. Thus, three separate analyses were performed.

The elementary grades 2 and 3 were exposed to Alpha II, WLC, Project Read, TRR, and a control program. The middle grade 7 was exposed to Alpha II, CMES, TRR, and a control group program. The middle grades 8 and 9 were exposed to Alpha II, CMES, and the control program.

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Reading Treatment Program
and Mean Achievement Gain

	<u>Grades</u>				
	<u>2</u>	<u>3</u>	<u>7</u>	<u>8</u>	<u>9</u>
Alpha II	.4	.5	.5	1.0	.8
Westinghouse	.6	.7			
Project Read	.7	.7			
Traditional Remedial Reading	.8	.8	.2		
Combined Motivation and Education			.7	1.1	.6
Control (Regular School)	.7	.4	.4	.3	.4

The relationship of costs to gains (cost-effectiveness) is summarized below for one-tenth (.1) student grade gain:

Elementary Grades 2 and 3

Alpha II	\$ 22.51
Westinghouse Learning	11.82
Project Read	16.34
Traditional Remedial Reading	49.60
Control (Regular Program)	14.28

Middle School Grade 7

Alpha II	\$ 19.89
Combined Motivation and Education	16.23
Traditional Remedial Reading	274.75
Control	23.82

Middle School Grades 8 and 9

Alpha II	\$ 10.47
Combined Motivation and Education	13.18
Control	25.24

Cost per one-tenth (.1) student achievement gain in reading.

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Major Conclusions

Elementary Grades 2 and 3

1. All reading programs studied resulted in less than one (1) year reading achievement gain.
2. There were no significant differences in grade gain achievement among the programs within the two studied grade levels.
3. Cost-effective analysis leads one to conclude that TRR programs are the most costly.
4. The Westinghouse program is indicated to be the least expensive per one-tenth (.1) grade gain.
5. Westinghouse, Project Read, and the control program are the most cost-effective, producing the greatest gains for less cost. All three are within a \$4.00 cost per one-tenth (.1) grade gain. However, the control group was over 20 per cent more expensive than WLC, Project Read was over 38 per cent more expensive.
6. The overall mean gain for TRR was the highest but the cost was considerably higher than the other four programs, almost five times as much as the lowest cost program.

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Middle School--Grade 7

1. The TRR program had the highest cost per one-tenth (.1) achievement gain (almost twelve times the control group cost).
2. The CMES and Alpha II programs were the most cost-effective, i.e., they provided the most learning for the dollar.
3. The control group performed half as well as the performance contracting programs.

Middle Schools--Grades 8 and 9

1. There was a significant difference between the control group and both performance contracting programs; Alpha II and CMES.
2. The control group was the most expensive group per one-tenth (.1) grade gain with the Alpha II program being only slightly over 41 per cent the cost of the control group and the CMES program cost being 68 per cent of the control group.
3. Student achievement gains in Alpha II and CMES were slightly above one (1) grade level, whereas the control group only gained approximately one-third as much.

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Implications

The findings of this study seem to indicate that certain implications for the reviewer's consideration must be mentioned.

Herewith are presented several of these implications which should be given further deliberation:

1. The apparent implications created by the inter-grouping of students in learning situations may have some sociological impact. In the performance contracting programs, there appeared to be an effective social relationship established among students for self-help and a help-one-another attitude, i.e., one student tutoring another which could have a further positive effect on better achievement.
2. Students who could evaluate their progress in the more structured and individualized programs appeared to have an improved attitude towards themselves, their peers and the school.
3. Student attendance in school did improve in the performance contract and programmed instruction programs which may have been a result of (a) better student self-image, due to the student's perception of his success, (b) the contract use obligation of the contractor and staff which required a minimum

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number of days attendance, and (c) or a greater sensitivity of the school system for keeping more accurate records.

4. Very serious consideration must be given the feasibility of continuing the traditional remedial reading programs as they are being carried on today. There are implications in this study for a more structured program. There are also implications for improving the methods of selecting students and the sociological impact upon the student who is chosen and identified with the remedial program. The isolation factor of a remedial reading setting may prove a hinderance to the student's ability to learn.
5. The role of the building principal may need to be redefined. The principal, in order to fulfill the requirement of a two-way street of accountability must have the autonomy to make decisions in implementing learning programs which should include day-to-day changes in program design as well as adequate local latitude in financial decisions affecting the immediate implementation of program changes.

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6. This study would indicate that schools have just begun to develop criteria for performance objectives of the education function. Schools will need to more clearly define these objectives as well as develop methods of evaluating the success or failure in achieving these objectives.

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